EPA HEADQUARTERS

RESOURCES

EPA-FY 2001 EPA FTEs (160 in FY01)

EPA S&T Funding \$62.30 million (FY2000 enacted)

\$65.27million (FY2001PresBud)

Information
Resources
Statutory
Authority
CAA -Title I
(NAAQS) [2]
CAA-Title IX
Mandated
Research [3]

Stakeholder Input Office of Air and Radiation

PROGRAMS/ACTIVITIES

(To address 10 NAS/NRC Priority Research Needs Listed in the Chart on Ten PM-2.5 Priority Research Topics) Research is summarized below by nature and laboratory.

Establishing NAAQS-Risk Characterization Health Effects

PM Health Effects Research on biological mechanisms of injury through toxicology, epidemiology and clinical studies (NHEERL), (NCEA)

Development of Air Quality Criteria
Assessment Document (AQCD, NCEA)

Ecological Effects (addressed under Goal 8)

Human Exposure

Research on PM exposures, and characterization of affected populations and sensitive subpopulations. (NERL)

Rules Implementation - Risk Management Environmental Characterization Research on regional and temporal variability in particles characteristics (size, composition, toxicity). (NERL)

Research on rate, frequency, size, and chemical composition of directly emitted particles from stationary, mobile, and area sources. (NERL, NRMRL) Research on rate and frequency of precursor emissions from stationary, mobile, and area sources. (NERL, NRMRL)

Methods and measurements (NERL)

Risk Management

Research on the performance and cost of fine particle control technologies for both directly emitted PM and PM precursors. (NRMRL)

Note: NCER awards STAR grants that address all 10 NRC/NAS topics for research (NCER)

OUTPUTS

Internal Outputs

NAAQS Development/Risk Characterization Air Quality Criteria Document Consultation on Criteria Document

Rules Implementation-Risk Man.
Research Needs Document
Biologically plausible quantitative
health risk model for PM by
2003.

Measurement information on PM by species and size by 2001.

Modeling information on PM by species and size (2001).

Source emissions information on PM by species and size (2001).

Emissions control information on PM by species and size (2001).

(Note: These outputs are inputs to Subobjective 1.1.2)

CUSTOMERS

EPA's OAQPS, OTAQ, ORD and NCEA offices.

SCVA: Congressional
Members and staffs
(Budget, Appropriations,
Authorization, and
Oversight Committees and
Subcommittees).

Other Federal Researchers (NAS/NRC, SAB/CASAC, DOI/NARSTO, NIH)

State, Local, and Tribal health and environmental agencies.

State Department (NCEA)

SHORT-TERM OUTCOMES (Knowledge, Attitudes, Skills, and Aspirations)

Customers become aware of, understand, and desire to use the new information on fine particles developed by this research.

EXTERNAL OUTPUTS

Peer Reviewed Papers
Journal Articles
Symposiums
Briefings
Workshops

CUSTOMERS

Industries, industrial suppliers, environmental consulting firms, scientific and policy community SHORT-TERM OUTCOMES (Knowledge, Attitudes, Skills, and Aspirations)

Industry and public become aware of the impact of their actions and desire to change their behavior.

NON-EPA PARTICULATE MATTER RESEARCH

US Federal Agency Research Activities on Fine Particulate Matter (sponsored/coordinated under OSTP/CENR/Air Quality Subcommittee) Involved With NAAQS Development, Rules Implementation and Risk Management

HHS/ National Institute of Allergy and Infectious Disease and HHS/National Institute of Environmental Health Sciences - Inner-city study of PM's role in children's asthma.

Department of the Interior (DOI) and DOC/NOAA (IMPROVE fine particle monitoring sites)

Department of Energy (DOE) - Lawrence Berkeley National Lab (NL), Brookhaven NL, National Energy Technology Lab (WV), Argonne National Laboratory

NASA Ames Research Center

Agency for Toxic Substances and Disease Registry (ATSDR)

US Dept of Agriculture (CSREES) and Agricultural Research Service

National Science Foundation

DOD/ US Air Force Research Lab

NIEHS, Centers for Disease Control

NARSTO Sponsored/Coordinated Research Activities on Fine Particulate Matter: (Involved with Implementation)

Canada and Mexico PM-2.5 research and monitoring activities.

Selected States (California Air Resources Board (CĂRB), Georgia DENR, New York Deptartment of Health, New York State Department of Transportation

(Lawrence Berkeley National Lab, UC-Berkeley, Georgia Institute of Technology, Pennsylvania State, UC-Riverside, UCLA, UC-Davis,

North Carolina Supercomputing Center, UC-Irvine, Cal. State-Fresno, California Institute of Technology, University of Albany, Harvard School of Public Health,

Massachusetts Institute Of Technology (MIT), Rutgers, Stanford, University of Minnesota, USC, Washington University, University of St. Louis); Brigham Young University, Carnegie Mellon University, Colorado State, Johns Hopkins Ohio State, University of Delaware, University of Maryland, Florida International University, University of Colorado, University of Wisconsin, University of Tennessee. Arizona State University.)

American Petroleum Institute (API)

Electric Power Research Institute (EPRI)

Industries (Energy & Environmental Research Corp., ARCADIS Geraghty & Miller, Inc., ACJ Associates; Advanced Technology Systems, Rupprecht & Patashnick,

Desert Research Institute, Aerodyne Research, Air Resource Specialists, Inc., AGRI Engineering, St. Louis ENSR Corp., YSA Corp.).

Bavarian State Ministry; British Lung Foundation (University of Edinburgh), World Health Organization, European Science Foundation, Pan American Health Organization, Association of South Fast Asian Nations.

Other Non-Federal Organizations Involved With NAAQS Development

National Academy of Sciences/National Research Council (NAS/NRC) Research Committee on Airborne PM and private groups such as the Health Effects Institute International entities such as World Health organization and environmental agencies in the United Kingdom, Mexico and Canada

State, Local, and Tribal agencies on PM Research

California, Georgia, Massachusetts, New York

directly on those ecosystems.

ACTIONS

pollution.

New research started.

Ten PM-2.5 Priority Research Topics:

- 1. Outdoor measures versus actual human exposures. (NERL, NRMRL)
- 2. Exposures of susceptible subpopulations to toxic particulates (refocusing former Research topics 3 & 4) (NERL)
- 3. Characterization of emissions sources (revised) (NRMRL)
- 4. Air quality Model development and testing (revised) (NERL)
- 5. Assessment of hazardous particulate matter components (NERL, NHEERL, NRMRL)
- 6. Dosimetry: Deposition and fate of particles in the respiratory system (NHEERL, NERL, NRMRL)
- 7. Combined effects of PM and Gaseous Pollutants (NHEERL)
- 8. Susceptible subpopulations (NERL, NHEERL)
- 9. Mechanisms of injury (NHEERL, NRMRL, NERL)
- 10. Analysis and measurement (NERL, NCEA)

FOOTNOTES

- [1] = This model was prepared based on EPA planning and budget documents, numerous EPA web-based information, applicable statutes and regulations, and interviews with EPA officials on the preliminary versions of the model. We did not discuss the model or its contents with EPA external stakeholders such as Congressional members, Oversight committees, industry groups, environmental groups or state agencies.
- [2] = CAA Title I calls for National Ambient Air Quality Standards (NAAQS) to be reviewed on a five year cycle. PM NAAQS revisions were last completed in 1997, and are due again in 2002 and five years after the 2002 NAAQS review. Criteria document in process.
- [3] = CAA Title IX requires that EPA conduct a research on the short-term and long-term effects of air pollutants on human health, as well as a research and development program for testing and developing methods for sampling, measurement, monitoring, analysis, and modeling of PM air pollutants. EPA is also required to conduct a program of engineering and technology to develop, evaluate and demonstrate non-regulatory strategies and technologies for air pollution prevention.

Page 4

Acronyms:

AMFA Alternative Motor Fuels Act of 1988 CAPF Clean Air Partnership Fund CTG Control Technologies Guidelines HFI

Health Effects Institute

ISTEA Intermodal Surface Transportation Efficiency Act Motor Vehicle Information & Cost Savings Act MVICSA

NARSTO NARSTO (formerly, the North American Research Strategy for Tropospheric

Ozone: now an acronym due to heavy investment in PM-2.5)

Office of Science and Technology Policy/Committee on Environment and OSTP/CENR

Natural Resources

PM-2.5 Particulate Matter less than or equal to 2.5 microns in diameter

PMRA Particulate Matter Research Activities (consortium) TEA-21 Transportation Equity Act for the 21st Century